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TRADE IN MEDICINAL DRUGS IN ANCIENT INDIA

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One of the fascinating aspects of the early medical literature is the development of a vast *materia medica*. Therapeutics, according to the medical authorities, is based on a four-pronged framework consisting of the physician, medicines, the attendant and the patient. Medicines are, of course, imperative to bring about the equilibrium of the *dhātus* or the body tissues (*kāryaṁ dhātusaṁyam-ihocyate*) which is the primary object of Āyurveda.[1] Hence, in order of importance, drugs have been given the second position in the quartet of therapeutics.[2]

The term commonly used for drugs in the two treatises of Caraka and Suśruta, is '*dravya*' which implies any substance/matter of therapeutic value. Āyurveda considers dietary articles as drugs as well since they have a preventive role in diseases. Drugs and dietary articles are homologous in composition for all matter is *pāñcabhautika* or constituted of the five primordial elements (earth, water, fire, air and ether) and may be animate or inanimate.[3] As every substance is composed of the five elements, theoretically speaking, any substance would have therapeutic value. Thus, the *Caraka Saṁhitā* says:

"*nānauṣadhibhūtaṃ jagati kiñciddravyamupalabhyate tāṃ tāṃ yuktimarthaṃ ca taṃ tamabhipretya*."[4]

"There is nothing in the world that does not have therapeutic utility in appropriate conditions and situations."

Considering the above statement, it is hardly surprising to find medical treatises of Caraka and Suśruta an extensive inventory of medicinal substances, their different names, their substitutes and their uses. It is estimated that more than a thousand Sanskrit names of plant drugs occur in both the *Caraka Saṁhitā* and the *Suśruta Saṁhitā*[5] though many of these names are synonyms.[6] This broadening repertoire of medicines necessitated systemization in the form of a classificatory system. Drugs (*dravyas*) were classified according to their derivation, tastes or action. The primary classification was on basis of their derivation: that is, *sthāvara* (vegetable), *jaṅgama* (animal) and *pārthiva* (inorganic). Metals, gems, salts, ash, ores, arsenic, shells, etc. are included in the inorganic category. In the *Caraka Saṁhitā*, the total number of drugs of vegetable origin is 341,[7] of animal origin 177,[8] and 64 mineral derivatives.[9] The *Suśruta Saṁhitā* mentions 404 drugs of vegetable origin,[10] 55 faunal derivatives,[11] and 63 substances of mineral origin.[12]

Such a vast repertoire of medicinal substances permitted physicians to create innumerable formulations, but it also raises the issues of their procurement and availability. The medical treatises provide meagre information about the mode of procuring such a vast array of substances. Physicians are advised that plants should be collected with care according to certain principles to ensure their potency. The collection should be done from the appropriate habitat (*deśa-sampat*), in the appropriate season (*kāla-sampat*), at the time when they are enriched with excellent attributes (*guṇa-sampat*) and stored in appropriate containers (*bhājana-sampat*).[13] Mature plants that are rich in *rasas* and unspoiled in every way are best suited for medicinal purposes.[14] Knowledge of plants as well as the soil types is essential for herb gatherer for the properties of the soil determine the properties of the plants.[15] Caraka prefers soil that is unctuous (*snigdha*), black (*kṛṣna*) or golden–hued (*suvarṇa-varṇa*) and sweet to taste (*madhura*),[16] while Suśruta recommends black, white or red soil.[17] Land that is fertile,[18] even, free of debris, close to water sources,[19] and not demarcated for any religious or public purpose[20] is considered ideal.

It is also advised that medicinal plants should be gathered from two types of eco-zones, that is, *jāṅgala–deśa* (dry land) and *sādhāraṇa-deśa* (neither dry nor wet).[21] It is interesting to note that physicians are advised to take the help of cowherds, sages, hunters and those moving about in forests and subsisting on a diet of roots and tubers for help in identification of herbs.[22]

The cultivation and storage of plants of medicinal value was a common practice in ancient India.[23] According to the *Arthaśāstra*, they are grown between rows of crops, on marshy land and in pots. Kauṭilya stipulates that rooms for wares and medicines (*bhaisaijyagṛham*) should occupy the north-western part of the city.[24] The government stores stocked medicines as well as items of utility to physicians— all kinds of fats, grains, sugar, salts, metals, hides, tendons, poisons and horns.[25] Care was taken to replenish old stocks.[26] Aśoka's Second Major Rock Edict outlines the steps taken for medical care of men and animals. "Medicinal herbs whether useful to man or to beast, have been brought and planted wherever they did not grow; similarly, roots and fruits have been brought and planted wherever they did not grow."[27] However, formulations of the *Saṁhitās* incorporate many plants and substances belonging to different habitats within the Indian subcontinent and even regions outside it. As they were drawn from different eco-zones, many items would have been available only through trade. This paper is an attempt to posit the existence of trade network in medicinal articles in the ancient India. I have taken into consideration vegetable drugs associated with specific habitats as well as at the sources of some mineral drugs in the formulations of the treatises of Caraka and the Suśruta.

The slopes of the sacred Himālayas are said to abound in medicinal herbs.[28] This view is reflected in the Rāmāyaṇa also for it is suggested that herbs of medicinal value are found mainly in the hills and that the Himālayas are rich in medicinal herbs.[29] Caraka advises that the best fruits of *āmalakī* (Emblica officinalis) and *harītaki* (*Terminalia chebula*) used in *Brahma rasāyana* and *Cyavana prāśa* and other rejuvenating formulations should be collected from the Himālayas.[30] Some the plants obtained from this mountainous region are *jaṭāmānsī* or *jaṭilā*[31] (*Nardostachys jatamansi* DC) which grows at great elevation in Kumaon, Nepal, Bhutan and Sikkim; *dāruharidrā* (Berberis aristata DC.);[32] *viṣa* or Indian aconite (Acontium ferox, Wali.),[33] and *ajmoda* (Apium Graveolens, Linn.) whose habitat lies at the base of the north-western Himālayas and outlying hills in the Punjab and in western India. Another drug obtained from this region that was particularly valuable for treatment of diabetes (*madhumeha*) is *śilājit* (asphaltum).[34] It is a thick tar-like substance exuded from the rocks in hot weather in the lower Himālayas, Vindhya and other mountain tracts. Suśruta mentions its efficacy in fourteen diseases[35] and it must have been much prized by physicians.

Saffron or *kuṅkuma* is cultivated in the Kashmir region but the herb is a native of Levant in Asia Minor.[36] It was grown in Kashmir by the third century C.E. as the Chinese sources describe it as a product of Kashmir.[37] In the *Amarakośa*, saffron is synonymous with Kāśmira and Bāhlīka.[38] Another medicinal drug growing abundantly on the Himālayas and in Kashmir valley is *kuṣṭha* or costus (*Saussurea lappa* Clarke.)[39] whose roots alone are used in medicine. *Hiṅgu*[40] or asafoetida also came from Bāhlīka.[41] Bāhlīka country is said to be bordering Kamboja. It was the modern Balkh region on the Oxus in the north of Afghanistan.[42]

We also find certain ingredients that were obtained from the coastal areas. These include pearls,[43] *samudraphena* (cuttlefish bone),[44] sea shells[45] and conch shells.[46] Cuttlefish bone and conch shells are used extensively in collyriums for eye diseases. On the western coast grows the *Hydnocarpus* tree (*tuvaraka*) that yields an oil used in the treatment of diabetes.[47] Red sandalwood (*candana*) which is an important ingredient in several antidotal formulations[48] is a tree generally met with in the forests of southern India.[49]

Both Caraka and Suśruta mention the frequent use of *aguru*[50]or agarwood (*Aquilaria agallocha* Roxb.) in healing oils and antidotal formulations. This tree thrives in north-eastern India[51] and south-east Asia (*Aquilaria malacensis* Lamk.).[52] Kauṭilya refers to three varieties of aloewood, of which two were indigenous varieties from Joṇga and Doṇga.[53] Both these places have been located in Assam. The third variety of *aguru* came from beyond the seas.[54] From the north-western region came *saindhava* (rock salt)[55] which literally means produced in Sindh or the country along the

Indus. The Salt Range, which is located between the Indus and the Jhelum rivers, has large deposits of rock salt. The arid rocky zones of Rajasthan, Sindh, Baluchistan, Berar, Khandesh and Mysore yield an important drug recommended by Suśruta in serious *vātika* disorders. These areas are the habitat of a tree commonly known as Indian Bdellium or *guggulu*[56] (*Cammiphora Mukul*)[57] which is obtained as a gum exudation from its bark. Thus, by the time of composition of the compendia of Caraka and Suśruta, the Āyurvedic pharmacopoeia already incorporated medicinal drugs from practically all over the subcontinent which would not be possible without the support of trading network as well as local exchanges.

It is noteworthy that spikenard, costus, bdellium[58] and malabathrum[59] find mention in the *Periplus Maris Erythraei* among items of export from India. Spikenard appears in the list of ingredients in the antidotes of Hippocrates, and was recommended by Celsus and Galen externally and internally in pains of the stomach and bowels.[60] Sir William Jones had successfully identified Spikenard as *Jatāmānsī* after several consultations with botanists and physicians.[61] Malabathrum leaf in the *Periplus* is probably *Cinnamomum tamala* Nees that grows in sub-tropical Himālayas, Khāsi and Jaintia hills;[62] but malabathrum exported from south India is *Cinnamomum iners* Blume or *Cinnamomum* Blume which grows in south India.[63] Costus root was used as a culinary spice, perfume and an ingredient in many ointments in the Roman Empire.[64] One of the most sought after spices in the western world was pepper which was exported in great bulk from the ports on the Malabar coast.[65] Other than textual notices (as in Pliny's '*Natural History*')[66] of Indian pepper, there is archaeological evidence as well. Excavations in 1999 at the Serapis temple located in Red Sea port of Berenike have unearthed two clay jars from India belonging to the early Roman period, about the first century CE. One of these jars contained 7.55 kilograms of black pepper.[67] Based on the accounts of Celsus, Dioscorides and Pliny we may conclude that Indian spices, herbs and medicinal plants became common in the pharmacy of the early Roman Empire.[68] It is also worth mentioning that bdellium, costus root and myrrh or Indian frankincense (*Boswellia serrata* Roxb.) found their way into Chinese markets as well.[69]

Among mineral products, *prabāla* (red coral),[70] *haritāla* (orpiment)[71] and *manahśilā* (realger),[72] used in *Saṁhitās* were imported into India.[73] The red coral of the Western Mediterranean was one of the principal assets of the Roman Empire in its trade with the East.[74] Two other articles of medicinal value not indigenous to the subcontinent are camphor (*karpūra*) and liquorice (*yaṣṭimadhu*/ *madhuka*). Camphor is found in Borneo, Sumatra and Malay Peninsula which was imported into India. Karpūradvīpa, presumably, is the collective name given to the camphor producing lands of southern Malaya, northern Sumatra and north-western Borneo in Indian sources.[75] *Yaṣṭimadhu* is used extensively by both Caraka[76] and Suśruta[77] in the treatment of several

conditions. *Yaṣṭimadhu* is not native to India[78] but grows wild in Arabia, Persia, Turkistan and Afghanistan, and by the end of the nineteenth century it had been introduced into the Punjab and Sind.[79] It is a very common plant in present day Uzbekistan and Kyrgyzstan and grows as a weed on river banks, embankments, saline soil, gentle slopes and foothills and in melon and cotton fields.[80] Since it is not indigenous to India but is used extensively by the Indian physicians, it is likely to have been imported from Central Asia.

Patañjali refers to the trade of *madhuka* and *marica*/ black pepper by land route.[81] Merchants on the Silk Road traded in spices and aromatics including liquorice.[82] It was probably, therefore expensive, which led physicians to substitute the roots of the *Abrus precatorius* plant for liquorice.[83] We may also note that the medical documents of Genizah belonging to the 12th-13th centuries reveal that myrobalans (genus *Terminalia*) feature among the ten most common substances used by Jewish physicians in old Cairo.[84] Its inclusion in the pharmacopeia of this region is a later development as the tree is not alluded to in Greek and Roman medical treatises. Most myrobalan species were imported from Asia and Africa into Egypt including India.[85]

However, some items were presumably obtained through local networks. Blood-letting was an important procedure for curing diseases caused by vitiated blood, for which cow horns, leeches and gourd instruments are required Surgeons had to arrange for collection and storage of leeches used in blood-letting. For this purpose, non-venomous species inhabiting clean and clear water alone can be used. Here again, there is no further information on the persons employed but it is noteworthy that gathering leeches was not a respectable profession in colonial India. In the late nineteenth and early twentieth centuries, a few Muslim families of Central India (Burhanpur) were involved in the breeding and application of leeches to patients. Known as Jokhāra, they married among themselves for no other Muslim would marry them. In other parts of India this work was done by sweepers and sometimes by their women. In Gujarat the Jokhāras were a branch of the Hajjam or the Muhammadan barber caste.[86] It is in this respect that we can go back to Caraka's advice of taking the help of cowherds and people living in forests who must have supplied many of the substances.

The above survey leaves no doubt that medicinal articles did form an important part of trading activities in ancient India, and remains a hitherto unexplored area. In fact, this area requires further investigation

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2. *CS. Sūtra-Sthāna*.9.3.
3. *CS. Sūtra-Sthāna*.26.13..
4. *CS.Sūtra-Sthāna*.26.12. A similar statement occurs in *Suśruta Saṁhitā*. *Sūtra-Sthāna*..41.5. G.D. Singhal, et al. (Eds. and trans.), *Ancient Indian Surgery based on Suśruta Saṁhitā*, Vols. 1-10, Delhi, 2006-7 (Reprint). Hereafter, *Suśruta Saṁhitā* shall be abbreviated as *SS*.
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13. *CS. Kalpa-Sthāna*.1.7.
14. *SS. Sūtra-Sthāna*.36.3.
15. *SS. Sūtra-Sthāna*.36.4.
16. *CS. Kalpa-Sthāna*.1.9.
17. *SS. Sūtra-Sthāna*.36.3.
18. Areas with pits, ant hills and saline soil are unsuitable. *CS. Kalpa-Sthāna*.1.9.
19. *SS. Sūtra-Sthāna*.36.3.
20. These areas include cremation ground, prayer ground (*devayajanāgāra*) and place of assembly (*sabha*) or where sacred tomb (*caitya*) is located. *CS. Kalpa-Sthāna*.1.9.
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30. Ibid. 1:1.38.
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46. *SS. Sūtra-Sthāna*.11.11; *Cikitsā-Sthāna* 1.105; *Uttara-Tantra*.8.8;12. 16, 22, 29,34.
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